

Appln. No. 10/669,201
Amdt. dated November 19, 2004
Reply to Office Action of September 1, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application:

Listing of Claims:

- 1 1. (currently amended) An improved quick release
2 mechanical bracket movable between a closed position
3 for detachably retaining a tank therewithin and an
4 opened position for release thereof comprising:
5 A. a frame means extending vertically including;
6 (1) an upper flange means extending outwardly
7 therefrom;
8 (2) a lower flange means extending outwardly
9 therefrom at a position spatially disposed
10 below said upper flange means to define a
11 tank holding zone therebetween;
12 B. a first driveshaft means rotatably mounted within
13 said upper flange means and rotatably mounted
14 within said lower flange means and extending
15 therebetween;
16 C. a second driveshaft means rotatably mounted within
17 said upper flange means at a position laterally
18 spatially disposed from said first driveshaft
19 means, said second driveshaft means being
20 rotatably mounted within said lower flange means
21 at a position spatially disposed laterally from
22 said first driveshaft means, said second
23 driveshaft means extending vertically between said
24 upper flange means and said lower flange means at
25 a position laterally displaced from said first
26 driveshaft means, said second driveshaft means and
27 said first driveshaft means extending vertically
28 approximately parallel with respect to one another
29 to define said tank holding zone therebetween
30 below said upper flange means and above said lower
31 flange means;
32 D. at least one tank clamping means secured to said
33 first driveshaft means and said second driveshaft
34 means and being movable therewith between a
35 [[~~the~~]] closed position retaining a tank within
36 said tank holding zone and an opened position
37 releasing a tank to allow removal thereof from
38 said tank holding zone, each of said tank clamping
39 means including;

40 (1) a first clamping arm means secured to said
 41 first driveshaft means to be rotatably
 42 movable therewith between a closed position
 43 ~~for gripping [[in abutting engagement with a~~
 44 ~~tank positioned within said tank holding zone~~
 45 ~~for retaining same therewithin]]~~ and ~~[[the]]~~
 46 an opened position for releasing ~~[[same]]~~;
 47 (2) a second clamping arm means secured to said
 48 second driveshaft means and rotatably movable
 49 therewith between a closed position for
 50 gripping ~~[[in abutting engagement with a tank~~
 51 ~~positioned within said tank holding zone for~~
 52 ~~retaining same therewithin]]~~ and ~~[[the]]~~ an
 53 opened position for releasing ~~[[same]]~~;
 54 E. a first guide boss means fixedly secured to said
 55 frame means below said upper flange means and
 56 above said lower frame means at a position
 57 intermediate therebetween adjacent said first
 58 driveshaft means, said first guide boss means
 59 defining a first profiled guide surface at least
 60 partially encircling said first driveshaft means
 61 and positioned thereadjacent to prevent lateral
 62 deflection thereof;
 63 F. a second guide boss means fixedly secured to said
 64 frame means below said upper flange means and
 65 above said lower frame means at a position
 66 intermediate therebetween adjacent said second
 67 driveshaft means, said second guide boss means
 68 defining a second profiled guide surface at least
 69 partially encircling said second driveshaft means
 70 and positioned thereadjacent to prevent lateral
 71 deflection thereof; and
 72 G. an interengagement means operatively attached with
 73 respect to said first driveshaft means and said
 74 second driveshaft means for rotating both
 75 simultaneously, said interengagement means being
 76 operative to rotate said first driveshaft means
 77 counterclockwise and said second driveshaft means
 78 clockwise simultaneously to move said first
 79 clamping means and said second clamping means
 80 toward the closed position ~~[[for retaining of a~~
 81 ~~tank within said tank holding zone]]~~, said
 82 interengagement means being operative to rotate
 83 said first driveshaft means clockwise and said
 84 second driveshaft means counterclockwise
 85 simultaneously to move said first clamping means
 86 and said second clamping means toward the opened
 87 position ~~[[for releasing of a tank from within~~
 88 ~~said tank holding zone]]~~.

1 2. (currently amended) An improved quick release
 2 mechanical bracket ~~[[for detachably retaining a tank~~

3 ~~therewithin~~]] as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 is positioned adjacent said first driveshaft means
6 diametrically opposite from said tank holding zone to
7 restrict lateral flexing of said first driveshaft means
8 away from said tank holding zone and wherein said
9 second profiled guide surface of said second guide boss
10 means is positioned adjacent said second driveshaft
11 means diametrically opposite from said tank holding
12 zone to restrict lateral flexing of said second
13 driveshaft means away from said tank holding zone.

1 3. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 is laterally spaced from said first driveshaft means at
6 a distance of less than 0.015 inches and wherein said
7 second profiled guide surface of said second guide boss
8 means is laterally spaced from said second driveshaft
9 means at a distance of less than 0.015 inches.

1 4. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 is laterally spaced from said first driveshaft means at
6 a distance of between 0.005 and 0.010 inches
7 inclusively and wherein said second profiled guide
8 surface of said second guide boss means is laterally
9 spaced from said second driveshaft means at a distance
10 of between 0.005 and 0.010 inches inclusively.

1 5. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface is arcuate and wherein said
5 second profiled guide surface is arcuate.

1 6. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 extends through an arc of greater than 90 degrees and
6 less than 270 degrees to further limit lateral
7 deflecting of said first driveshaft means and wherein
8 said second profiled guide surface of said second guide
9 boss means extends through an arc of greater than 90
10 degrees and less than 270 degrees to further limit
11 lateral deflecting of said second driveshaft means.

1 7. (currently amended) An improved quick release

2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 extends through an arc approximately 120 degrees to
6 further limit lateral deflecting of said first
7 driveshaft means and wherein said second profiled guide
8 surface of said second guide boss means extends through
9 an arc of approximately 120 degrees to further limit
10 lateral deflecting of said second driveshaft means.

1 8. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 profiled guide surface of said first guide boss means
5 includes a first upper guide edge and a first lower
6 guide edge spaced apart from said first upper guide
7 edge to further prevent deflection of said first
8 driveshaft means laterally and wherein said second
9 profiled guide surface of said second guide boss means
10 includes a second upper guide edge and a second lower
11 guide edge spaced apart from said second upper guide
12 edge to further prevent deflection of said second
13 driveshaft means laterally.

1 9. canceled

1 10. canceled

1 11. canceled

1 12. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 driveshaft means is of hexagonal cross-sectional shape
5 defining first flat zones with first protruding corner
6 edges between adjacent of said first flat zones to
7 facilitate keying thereof with respect to said tank
8 clamping means and to facilitate simultaneous rotation
9 thereof between the closed position and opened position
10 and wherein said first profiled guide surface is spaced
11 at approximately 0.005 to 0.010 inches from said first
12 protruding corner edges for selective abutment
13 therewith responsive to lateral deflection of said
14 first driveshaft for minimizing thereof.

1 13. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said second
4 driveshaft means is of hexagonal cross-sectional shape
5 defining second flat zones with second protruding
6 corner edges between adjacent of said second flat zones
7 to facilitate keying thereof with respect to said tank

8 clamping means and to facilitate simultaneous rotation
9 thereof between the closed position and opened position
10 and wherein said second profiled guide surface is
11 spaced at approximately 0.005 to 0.010 inches from said
12 second protruding corner edges for selective abutment
13 therewith responsive to lateral deflection of said
14 second driveshaft for minimizing thereof.

1 14. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 driveshaft means and said second driveshaft means are
5 made of steel and wherein said first guide boss means
6 and said second guide boss means are made of cast
7 aluminum to minimize wear of said first driveshaft
8 means and said second driveshaft means responsive to
9 lateral deflection thereof causing abutment thereof
10 with respect to said first guide boss means and said
11 second guide boss means, respectively.

1 15. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 guide boss means is positioned adjacent said first
5 driveshaft means at a position halfway between said
6 upper flange means thereabove and said lower flange
7 means therebelow and wherein said second guide boss
8 means is positioned adjacent said second driveshaft
9 means at a position halfway between said upper flange
10 means thereabove and said lower flange means
11 therebelow.

1 16. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said first
4 guide boss means and said second guide boss means are
5 integrally formed with respect to said frame means.

1 17. (currently amended) An improved quick release
2 mechanical bracket ~~[[for detachably retaining a tank~~
3 ~~therewithin]]~~ as defined in Claim 1 wherein said frame
4 means includes a securement apparatus for facilitating
5 mounting of said frame means to environmental
6 structure, said securement apparatus including:
7 A. an upper securement means positioned adjacent said
8 upper flange means;
9 B. a lower securement means positioned adjacent said
10 lower flange means; and
11 C. an intermediate securement means positioned
12 immediately adjacent said first guide boss means
13 and said second guide boss means for facilitating
14 maintaining of structural integrity thereof in

15 order to minimize lateral deflecting of said first
16 driveshaft means and said second driveshaft means,
17 respectively.

- 1 18. (currently amended) An improved quick release
2 mechanical bracket movable between a closed position
3 for detachably retaining a tank therewithin and an
4 opened position for release thereof comprising:
5 A. a frame means extending vertically including;
6 (1) an upper flange means extending outwardly
7 therefrom;
8 (2) a lower flange means extending outwardly
9 therefrom at a position spatially disposed
10 below said upper flange means to define a
11 tank holding zone therebetween;
12 B. a first driveshaft means rotatably mounted within
13 said upper flange means and rotatably mounted
14 within said lower flange means and extending
15 therebetween;
16 C. a second driveshaft means rotatably mounted within
17 said upper flange means at a position laterally
18 spatially disposed from said first driveshaft
19 means, said second driveshaft means being
20 rotatably mounted within said lower flange means
21 at a position spatially disposed laterally from
22 said first driveshaft means, said second
23 driveshaft means extending vertically between said
24 upper flange means and said lower flange means at
25 a position laterally displaced from said first
26 driveshaft means, said second driveshaft means and
27 said first driveshaft means extending vertically
28 approximately parallel with respect to one another
29 to define said tank holding zone therebetween
30 below said upper flange means and above said lower
31 flange means;
32 D. a tank clamping means secured to said first
33 driveshaft means and said second driveshaft means
34 and being movable therewith between a ~~the~~
35 closed position retaining a tank within said tank
36 holding zone and an opened position releasing a
37 tank to allow removal thereof from said tank
38 holding zone, said tank clamping means including;
39 (1) an upper tank clamping member including
40 (a) a first upper clamping arm means;
41 (b) a second upper clamping arm means, said
42 first upper clamping arm means being
43 secured to said first driveshaft means
44 at a position thereon closer to said
45 upper flange means than to said lower
46 flange means and said second upper
47 clamping arm means being secured to said
48 second driveshaft means at a position

- thereon closer to said upper flange means than to said lower flange means;
- (2) a lower tank clamping member including;
- (a) a first lower clamping arm means;
- (b) a second lower clamping arm means, said first lower clamping arm means being secured to said first driveshaft means at a position thereon closer to said lower flange means than to said upper flange means and said second lower clamping arm means being secured to said second driveshaft means at a position thereon closer to said lower flange means than to said upper flange means;
- E. a first guide boss means formed integrally with said frame means below said upper flange means and above said lower frame means at a position intermediate therebetween adjacent said first driveshaft means, said first guide boss means defining a first profiled guide surface being arcuate and at least partially encircling said first driveshaft means and positioned thereadjacent to prevent lateral deflection thereof, said first profiled guide surface of said first guide boss means being positioned adjacent said first driveshaft means diametrically opposite from said tank holding zone to restrict lateral flexing of said first driveshaft means away from said tank holding zone, said first profiled guide surface of said first guide boss means being laterally spaced from said first driveshaft means at a distance of less than 0.015 inches, said first profiled guide surface of said first guide boss means extending through an arc of greater than 90 degrees and less than 270 degrees to further limit lateral deflecting of said first driveshaft means, said first guide boss means being positioned adjacent said first driveshaft means at a position halfway between said upper flange means thereabove and said lower flange means therebelow, said first profiled guide surface including:
- (1) a first upper guide edge;
- (2) a first lower guide edge spaced apart from said first upper guide edge, said first upper guide edge and said first lower guide edge cooperating to further prevent deflection of said first driveshaft means laterally;
- F. a second guide boss means formed integrally with said frame means below said upper flange means and above said lower frame means at a position intermediate therebetween adjacent said second

101 driveshaft means, said second guide boss means
 102 defining a second profiled guide surface being
 103 arcuate and at least partially encircling said
 104 second driveshaft means and positioned
 105 thereadjacent to prevent lateral deflection
 106 thereof, said second profiled guide surface of
 107 said second guide boss means being positioned
 108 adjacent said second driveshaft means
 109 diametrically opposite from said tank holding zone
 110 to restrict lateral flexing of said second
 111 driveshaft means away from said tank holding zone,
 112 said second profiled guide surface of said second
 113 guide boss means being laterally spaced from said
 114 second driveshaft means at a distance of less than
 115 0.015, said second profiled guide surface of said
 116 second guide boss means extending through an arc
 117 of greater than 90 degrees and less than 270
 118 degrees to further limit lateral deflecting of
 119 said second driveshaft means, said second guide
 120 boss means being positioned adjacent said second
 121 driveshaft means at a position halfway between
 122 said upper flange means thereabove and said lower
 123 flange means therebelow, said second profiled
 124 guide surface of said second guide boss means
 125 including:
 126 (1) a second upper guide edge;
 127 (2) a second lower guide edge spaced apart from
 128 said second upper guide edge, said second
 129 lower guide edge and said second upper guide
 130 edge cooperating together to further prevent
 131 deflection of said second driveshaft means
 132 laterally; and
 133 G. an interengagement means operatively attached with
 134 respect to said first driveshaft means and said
 135 second driveshaft means for rotating both
 136 simultaneously, said interengagement means being
 137 operative to rotate said first driveshaft means
 138 counterclockwise and said second driveshaft means
 139 clockwise simultaneously to move said first
 140 clamping means and said second clamping means
 141 toward the closed position for retaining of a tank
 142 within said tank holding zone, said
 143 interengagement means being operative to rotate
 144 said first driveshaft means clockwise and said
 145 second driveshaft means counterclockwise
 146 simultaneously to move said first clamping means
 147 and said second clamping means toward the opened
 148 position for releasing of a tank from within said
 149 tank holding zone.

1 19. (currently amended) An improved quick release
 2 mechanical bracket movable between a closed position

3 for detachably retaining a tank therewithin and an
4 opened position for release thereof comprising:

5 A. a frame means of aluminum extending vertically
6 including;

7 (1) an upper flange means extending outwardly
8 therefrom;

9 (2) a lower flange means extending outwardly
10 therefrom at a position spatially disposed
11 below said upper flange means to define a
12 tank holding zone therebetween;

13 (3) a securement apparatus for facilitating
14 mounting of said frame means to environmental
15 structure, said securement apparatus
16 including:

17 (a) an upper securement means positioned
18 adjacent said upper flange means;

19 (b) a lower securement means positioned
20 adjacent said lower flange means;

21 (c) an intermediate securement means
22 positioned at an intermediate position
23 below said upper securement means and
24 above said lower securement means to
25 facilitate fixed securement of said
26 frame means to environmental structure;

27 B. a first driveshaft means made of steel and
28 rotatably mounted within said upper flange means
29 and rotatably mounted within said lower flange
30 means and extending therebetween;

31 C. a second driveshaft means made of steel and
32 rotatably mounted within said upper flange means
33 at a position laterally spatially disposed from
34 said first driveshaft means, said second
35 driveshaft means being rotatably mounted within
36 said lower flange means at a position spatially
37 disposed laterally from said first driveshaft
38 means, said second driveshaft means extending
39 vertically between said upper flange means and
40 said lower flange means at a position laterally
41 displaced from said first driveshaft means, said
42 second driveshaft means and said first driveshaft
43 means extending vertically approximately parallel
44 with respect to one another to define said tank
45 holding zone therebetween below said upper flange
46 means and above said lower flange means;

47 D. a tank clamping means secured to said first
48 driveshaft means and said second driveshaft means
49 and being movable therewith between a ~~the~~
50 closed position retaining a tank within said tank
51 holding zone and an opened position releasing a
52 tank to allow removal thereof from said tank
53 holding zone, said tank clamping means including;
54 (1) an upper tank clamping member including

55 (a) a first upper clamping arm means;
 56 (b) a second upper clamping arm means, said
 57 first upper clamping arm means being
 58 secured to said first driveshaft means
 59 at a position thereon closer to said
 60 upper flange means than to said lower
 61 flange means and said second upper
 62 clamping arm means being secured to said
 63 second driveshaft means at a position
 64 thereon closer to said upper flange
 65 means than to said lower flange means;
 66 (2) a lower tank clamping member including;
 67 (a) a first lower clamping arm means;
 68 (b) a second lower clamping arm means, said
 69 first lower clamping arm means being
 70 secured to said first driveshaft means
 71 at a position thereon closer to said
 72 lower flange means than to said upper
 73 flange means and said second lower
 74 clamping arm means being secured to said
 75 second driveshaft means at a position
 76 thereon closer to said lower flange
 77 means than to said upper flange means;
 78 E. a first guide boss means of aluminum and formed
 79 integrally with said frame means below said upper
 80 flange means and above said lower frame means at a
 81 position intermediate therebetween adjacent said
 82 first driveshaft means, said first guide boss
 83 means positioned immediately adjacent said
 84 intermediate securement means in order to
 85 facilitate maintaining of structural integrity of
 86 said frame means thereadjacent for minimizing
 87 lateral deflecting of said first driveshaft mean,
 88 said first guide boss means defining a first
 89 profiled guide surface being arcuate and at least
 90 partially encircling said first driveshaft means
 91 and positioned thereadjacent to prevent lateral
 92 deflection thereof, said first profiled guide
 93 surface of said first guide boss means being
 94 positioned adjacent said first driveshaft means
 95 diametrically opposite from said tank holding zone
 96 to restrict lateral flexing of said first
 97 driveshaft means away from said tank holding zone,
 98 said first profiled guide surface of said first
 99 guide boss means being laterally spaced from said
 100 first driveshaft means at a distance of 0.005 to
 101 0.010 inches, said first profiled guide surface of
 102 said first guide boss means extending through an
 103 arc of approximately 120 degrees to further limit
 104 lateral deflecting of said first driveshaft means,
 105 said first guide boss means being located at an
 106 intermediate position adjacent said first

107 driveshaft means below said first upper clamping
108 arm means and above said first lower clamping arm
109 means to minimize lateral deflection of said first
110 driveshaft means, said first guide boss means
111 being positioned adjacent said first driveshaft
112 means at a position halfway between said upper
113 flange means thereabove and said lower flange
114 means therebelow, said first profiled guide
115 surface including:
116 (1) a first upper guide edge;
117 (2) a first lower guide edge spaced apart from
118 said first upper guide edge, said first upper
119 guide edge and said first lower guide edge
120 cooperating to further prevent deflection of
121 said first driveshaft means laterally;
122 F. a second guide boss means of aluminum and formed
123 integrally with said frame means below said upper
124 flange means and above said lower frame means at a
125 position intermediate therebetween adjacent said
126 second driveshaft means, said second guide boss
127 means positioned immediately adjacent said
128 intermediate securement means in order to
129 facilitate maintaining of structural integrity of
130 said frame means thereadjacent for minimizing
131 lateral deflecting of said second driveshaft
132 means, said second guide boss means defining a
133 second profiled guide surface being arcuate and at
134 least partially encircling said second driveshaft
135 means and positioned thereadjacent to prevent
136 lateral deflection thereof, said second profiled
137 guide surface of said second guide boss means
138 being positioned adjacent said second driveshaft
139 means diametrically opposite from said tank
140 holding zone to restrict lateral flexing of said
141 second driveshaft means away from said tank
142 holding zone, said second profiled guide surface
143 of said second guide boss means being laterally
144 spaced from said second driveshaft means at a
145 distance between 0.005 to 0.010 inches, said
146 second profiled guide surface of said second guide
147 boss means extending through an arc of
148 approximately 120 degrees to further limit lateral
149 deflecting of said second driveshaft means, said
150 second guide boss means being located at an
151 intermediate position adjacent said second
152 driveshaft means below said second upper clamping
153 arm means and above said second lower clamping arm
154 means to minimize lateral deflection of said
155 second driveshaft means, said second guide boss
156 means being positioned adjacent said second
157 driveshaft means at a position halfway between
158 said upper flange means thereabove and said lower

159 flange means therebelow, said second profiled
160 guide surface of said second guide boss means
161 including:
162 (1) a second upper guide edge;
163 (2) a second lower guide edge spaced apart from
164 said second upper guide edge, said second
165 lower guide edge and said second upper guide
166 edge cooperating together to further prevent
167 deflection of said second driveshaft means
168 laterally; and
169 G. an interengagement means operatively attached with
170 respect to said first driveshaft means and said
171 second driveshaft means for rotating both
172 simultaneously, said interengagement means being
173 operative to rotate said first driveshaft means
174 counterclockwise and said second driveshaft means
175 clockwise simultaneously to move said first
176 clamping means and said second clamping means
177 toward the closed position for retaining of a tank
178 within said tank holding zone, said
179 interengagement means being operative to rotate
180 said first driveshaft means clockwise and said
181 second driveshaft means counterclockwise
182 simultaneously to move said first clamping means
183 and said second clamping means toward the opened
184 position for releasing of a tank from within said
185 tank holding zone.